

Notice of Allowability

Application No.

10/630,351

Examiner

Krishnan S. Menon

Applicant(s)

GORDON ET AL.

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/2/06.
2. ☒ The allowed claim(s) is/are 257,260 and 263-277; RENUMBERED 1-17.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stanley Kim on 5/10/06.

The application has been amended as follows:

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In the specification, page 10, paragraphs 0082 and 0083, delete "A" from the end of the paragraphs.

The claims were amended to make them in condition for allowance. A list of amended claims follows on a fresh page below:

Amended Claims List

Claims 1-256 (canceled)

Claim 257 (currently amended): A system for desalinating water to yield desalinated water and a concentrate, the system comprising:

a first sea-going vessel being positioned on the surface of a body of seawater;

a membrane-based water desalination system installed on the first sea-going vessel, the membrane-based water desalination system capable of removing salt from seawater to yield ~~at least 10 million gallons per day of~~ desalinated water;

a water intake system installed aboard the first sea-going vessel and comprising a first conduit for transporting seawater from the body of seawater to the membrane-based water desalination system;

a mixing system for mixing the concentrate with the seawater to yield diluted concentrate, the mixing system being installed aboard the first sea-going vessel in communication with the membrane-based water desalination system and comprising a mixing tank comprising a series of baffles and a mixing barrier having a plurality of apertures, an inlet for introducing the concentrate into the mixing tank system, an inlet for introducing seawater into the mixing tank system, ~~a space for mixing the concentrate with the seawater to yield diluted concentrate,~~ and an outlet for discharging the diluted concentrate from the mixing tank system;

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a concentrate discharge system installed aboard the first sea-going vessel and comprising an inlet for receiving the diluted concentrate and a discharge port for discharging the diluted concentrate from the first sea-going vessel into the body of seawater; and

a desalinated water transfer system installed aboard the first sea-going vessel and comprising a second conduit fluidly connecting the membrane-based water desalination system to a means for delivering desalinated water from the first sea-going vessel to a land-based distribution system, the second conduit capable of transporting at least 10 million gallons per day of desalinated water from the membrane-based water desalination system to the means for delivering desalinated water from the first sea-going vessel to the land-based distribution system.

Claim 258 (canceled)

Claim 259 (canceled)

Claim 260 (currently amended): The system of claim ~~[[258]]~~ 257, wherein the mixing tank ~~comprises a device for mixing~~ mixes the concentrate and seawater used to dilute the concentrate to form a substantially homogenous mixture.

Claim 261 (canceled)

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Claim 262 (canceled)

Claim 263 (previously presented): The system of claim 257, wherein the system further comprises the means for delivering desalinated water from the first sea-going vessel to the land-based distribution system and said means comprises a second sea-going vessel, the second sea-going vessel operable to receive the desalinated water from the first sea-going vessel and to deliver the desalinated water to the land-based distribution system.

Claim 264 (previously presented): The system of claim 257, wherein the system further comprises the means for delivering desalinated water from the first sea-going vessel to a land-based distribution system and said means comprises a pipeline.

Claim 265 (previously presented): The system of claim 264, wherein the pipeline comprises a seafloor stabilized pipeline.

Claim 266 (previously presented): The system of claim 264, wherein the pipeline comprises a sea-floor embedded pipeline.

Claim 267 (previously presented): The system of claim 257, wherein the system further comprises (i) the means for delivering desalinated water from the first sea-going

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vessel to a land-based distribution system and (ii) the land-based distribution system, and the distribution system comprises:

- a water storage tank;
- a pumping station; and
- a pipeline or a pipeline network.

Claim 268 (previously presented): The system of claim 257, wherein the membrane-based water desalination system is capable of producing desalinated water in the range of about 10 million gallons per day to about 100 million gallons per day.

Claim 269 (previously presented): The system of claim 257, wherein the membrane-based water desalination system comprises a reverse osmosis system.

Claim 270 (previously presented): The system of claim 257, wherein the membrane-based water desalination system is operable to produce desalinated water substantially continuously.

Claim 271 (currently amended): A method of desalinating seawater aboard a sea-going vessel positioned on the surface of a body of seawater, the method comprising the steps of:

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(a) desalinating seawater aboard a first sea-going vessel being positioned on the surface of a body of seawater to yield desalinated water and a concentrate using a system comprising:

a first sea-going vessel being positioned on the surface of a body of seawater;

a membrane-based water desalination system installed on the first sea-going vessel, the membrane-based water desalination system capable of removing salt from seawater to yield desalinated water;

a water intake system installed aboard the first sea-going vessel and comprising a first conduit for transporting seawater from the body of seawater to the membrane-based water desalination system;

a mixing system for mixing the concentrate with the seawater to yield diluted concentrate, the mixing system being installed aboard the first sea-going vessel in communication with the membrane-based water desalination system and comprising a mixing tank comprising a series of baffles and a mixing barrier having a plurality of apertures, an inlet for introducing the concentrate into the mixing tank, an inlet for introducing seawater into the mixing tank, and an outlet for discharging the diluted concentrate from the mixing tank;

a concentrate discharge system installed aboard the first sea-going vessel and comprising an inlet for receiving the diluted concentrate and a

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discharge port for discharging the diluted concentrate from the first sea-going vessel into the body of seawater; and

a desalinated water transfer system installed aboard the first sea-going vessel and comprising a second conduit fluidly connecting the membrane-based water desalination system to a means for delivering desalinated water from the first sea-going vessel to a land-based distribution system, the second conduit capable of transporting desalinated water from the membrane-based water desalination system to the means for delivering desalinated water from the first sea-going vessel to the land-based distribution system;

(b) mixing the concentrate with seawater to yield a diluted concentrate;

(c) discharging the diluted concentrate from the first sea-going vessel into the body of seawater via ~~[[a]] the concentrate discharge system installed on the first sea-going vessel and comprising an inlet for receiving the diluted concentrate and a discharge port for discharging the diluted concentrate from the first sea-going vessel into the body of seawater; and~~

(d) transferring the desalinated water from the first sea-going vessel to ~~[[a]] the~~ land-based distribution system.

Claim 272 (previously presented): The method of claim 271, wherein the step of transferring desalinated water from the first sea-going vessel to the land-based distribution system comprises:

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transferring the desalinated water from the first sea-going vessel to a pipeline; and

transporting the desalinated water disposed in the pipeline to the land-based distribution system.

Claim 273 (previously presented): The method of claim 272, wherein the pipeline comprises a sea-floor stabilized pipeline.

Claim 274 (previously presented): The method of claim 272, wherein the pipeline comprises a sea-floor embedded pipeline.

Claim 275 (previously presented): The method of claim 271, further comprising the steps of:

providing a storage tank;

communicating a pipeline or a pipeline network with the storage tank; and

communicating a pumping station with the pipeline or the pipeline network.

Claim 276 (previously presented): The method of claim 271, wherein a rate of production of desalinated water is in the range of about 10 million gallons per day to about 100 million gallons per day.

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Claim 277 (currently amended): The method of claim 271, wherein the step of desalinating seawater comprises subjecting the seawater to ~~[[a]]~~ reverse osmosis.

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Allowable Subject Matter

Claims 257,260,and 263-277 are allowed.

The following is an examiner's statement of reasons for allowance:

The closest references are Lampe, et al., "PCS- Preussag Conversion System® Mobile floating seawater desalination plant", Desalination 114 (1997) 145-151 (submitted by applicant in an IDS), Lerat (US 4,169,789), Bosley (US 6,348,148) and Krylov (US 6,658,889).

The PCS system and Lerat teach a mobile desalination system using reverse osmosis, etc., on a seagoing vessel, but does not teach diluting the brine with seawater before disposal. Bosley teaches an off-shore submerged desalination system that can be suspended from a ship or barge or anchored to the ocean floor, the environmental effects of discharging concentrated brine to the sea, and mixing seawater with the brine before or at the point of discharge (column 4 lines 1-20). Krylov teaches a desalination system on a fishing ship, the brine discharge from which is mixed with seawater to form ice slush, which is eventually disposed. The ice slush-making vessel has baffles and a paddle mixer. However none of the references teach the mixing tank having the baffles and the mixing barrier with plurality of apertures. Mixing tanks for the purpose of mixing incoming feed with concentrate streams of reverse osmosis plants are also known in the art (See Al-Samadi et al, US 5,501,798); however they are all for the purpose of recycling part of the concentrate stream (or brine) to increase the desalinated water yield, or the % conversion (or reduce the brine disposal); not for the purpose of diluting the brine before disposal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'K S Menon', with a stylized flourish at the end.

Krishnan S. Menon
Patent Examiner
5/10/06